Chapter 5
Methodology

Abstract This chapter discusses the methodology adopted for empirical analysis of the Vietnamese motorcycle industry. This book conducts retrospective case studies of suppliers purposefully selected so as to illuminate the diversity of learning trajectories and sources. Data collection is mainly through repeated rounds of in-depth interviews with these suppliers, which were supplemented by industry-level statistics and interviews with other key actors in the industry.

Keywords Retrospective case study · Purposeful sampling · Qualitative interviews · Multiple sourcing of data

This chapter discusses the methodology adopted for empirical analysis of the Vietnamese motorcycle industry. The chapter first introduces the overall methodological approach, which is retrospective case study. This is followed by discussion of the methods of selecting cases as well as data collection and analysis.

5.1 Research Design: Retrospective Case Study

This book seeks to analyse the processes and mechanisms of motorcycle component supplier learning that extended over a period of a decade. To this end, it adopts the *retrospective case study* (de Vaus 2001; Glick et al. 1995; Tuma and Hannan 1984) as the main overarching method. In the present context, this involves illuminating supplier capability building processes by observing the sequence of key events after a given supplier's entry into a value chain.

The basic unit of analysis is the supplier. However, individual learning events will also be analysed as embedded subunits. This study adopts a multiple, rather than single, case design, for two reasons. First, the conceptual framework presented in Chap. 4 assumes suppliers' learning trajectories to be heterogeneous depending on the ways suppliers themselves mobilise internal sources of knowledge, the modes by which other actors—most notably, lead firms—are engaged in supplier learning, and the nature and magnitude of knowledge flows between these actors.

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Second, the large number of local suppliers in the Vietnamese motorcycle industry and the recurrent changes in the learning performance of suppliers emerged as a serious constraint in identifying a single critical case. According to the official statistics, the total number of local firms registered as producers of motorcycle components was 60 in 2002 and 112 in 2006.[1] However, the actual number of suppliers is expected to be much larger. Nguyen (2004: 238), citing the report by the Economic and Financial Committee of the National Assembly in 2001, notes that around 550 firms produced motorcycle components.

5.2 Selection of Cases

While there is no ideal number of cases for the multiple case study method, the number should be sufficiently large to enable the researcher to encompass a range of variation more or less representative of the sector (Eisenhardt 1989). Given that the conceptual framework developed in Chap. 4 assumes a variety of factors to influence supplier learning trajectories, in-depth examination of a very small number of suppliers (two to five), the approach adopted by most previous studies on the Vietnamese motorcycle industry (Pham and Shusa 2006; Pham 2007; Tran 2009), was considered to be inadequate for this research. Rather, the author sought to cover a sufficiently large number of cases so as to shed light on the heterogeneity of learning trajectories among suppliers participating in different types of value chains as well as those participating in the same value chain.

The cases were selected *purposefully*, rather than randomly, based on a combination of two types of replication logic in case study research (Patton 2002; Yin 2003; Eisenhardt 1989). One is literal replication, which is aimed at producing similar results across cases. The other is theoretical replication, which is designed to produce contrasting results for predictable reasons. The following describes how the cases were selected.

First, cases were limited to firms that mainly produced key motorcycle components that were vital to manufacturers. These included suppliers of metal and plastic parts, firms specialising in particular production processes such as plating, and suppliers of dies and moulds. As a guideline, cases were limited to those firms that depended on motorcycle components for at least 40 % of their sales.

Second, reflecting the focus of this book on the lead firm as one of the key actors in the sector, cases were classified into three categories according to type of value chain and position in the chain, as follows: (1) first-tier suppliers in Japanese chains, (2) second-tier suppliers in Japanese chains, and (3) suppliers in Vietnamese–Chinese chains.

[1] The author's calculation based on the lists of operating firms provided by the General Statistics Office.

Third, within each category of suppliers participating in a particular type of value chain, attempts were made to include a subset of firms that were broadly similar in terms of attributes that might influence learning performance, as well as a subset of those that differed in this regard. Examples of such attributes include ownership, timing of entry into a value chain, and types of components manufactured. In the context of Vietnam, ownership (i.e., state or private) is critical because state-owned enterprises (SOEs) are generally more advantaged in access to financial resources than private firms (Leung 2009). Another key attribute in the context of this research is a supplier's membership in a state-owned business group called Vietnam Engine and Agricultural Machinery Corporation (VEAM). It is a business group managed by the Ministry of Industry and Trade and consisting of more than 20 member companies, traditionally specialising in the production of diesel engines and agricultural machinery. VEAM contributes 30 % capital to HVN,[2] and, as will be discussed in Chap. 8, membership in VEAM eventually emerged as an important factor influencing HVN's sourcing practices.

Other than by the replication logic described above, the selection of cases was inevitably subject to pragmatic constraints such as time, financial resources and access to firms (Eisenhardt 1989). To better ensure the quality of retrospective data covering the period of a decade, priority was given to those suppliers that had been interviewed by the author in the previous rounds of interviews in 2002, 2003, 2004 and/or 2005 (see Sect. 5.3 for details). However, new cases were also added because (1) the number of previously interviewed suppliers, particularly those in Vietnamese–Chinese chains, was not sufficient; (2) information on crucial suppliers, including those that had only recently entered Japanese or Vietnamese–Chinese chains, became available; and (3) some suppliers previously interviewed either could not be contacted or refused to be interviewed.

Table 5.1 provides the list of 21 case suppliers, illustrating the basic profiles and attributes underlying the replication logic that guided the selection of cases. Suppliers are classified into three groups according to the type of motorcycle value chain in which they participated. *Group A* consists of 11 suppliers that participated in Japanese chains but not in Vietnamese–Chinese chains; *Group B* comprises five suppliers that had initially participated in Vietnamese–Chinese chains but eventually entered a Japanese chain; and *Group C* consists of five suppliers that had participated in Vietnamese–Chinese chains but not in Japanese chains. None of the suppliers in Group A transferred from a Japanese chain to a Vietnamese–Chinese chain. The majority of them also participated in value chains other than Japanese or Vietnamese–Chinese ones.

Of the data given in Table 5.1, that under the heading *Business start-up* may need elaboration. The years of business start-up of the 21 case suppliers ranged from 1959 to 2004, which means that the length of a given supplier's operating

[2] VEAM is also a joint venture partner for Toyota and Ford in Vietnam. Vikyno, a manufacturer of agricultural machinery belonging to VEAM, also contributes 30 % capital to Vietnam Suzuki, which manufactures both cars and motorcycles.

Table 5.1 Suppliers selected for case study

Firm	Ownership	VEAM member	Type of component processing[a]	Number of employees	Business start-up	Products/experience prior to entry into a motorcycle value chain	Value chain participation[b]							
							Stage I		Stage II			Stage III		
							J	Other	J	V–C	Other	J	V–C	Other
A1	State		Plastic	550	1972	Household products	1	1	1		1	1		1
A2	State		Metal	1,350	1974	Bicycle components	1	1	1			1		
A3	State		Metal	1,000	1974	Household products	1	1	1		1	1		
A4	Private		Plastic	1,000	1988	Plastic packaging for export		1	1		1	1		1
A5	Private		Assembly	500	1994	Wire harnesses for export to Japan		1	1		1	1		1
A6	State	X	Metal	1,000	1968	Agricultural machinery and components		1	1		1	1		1
A7	Private		Specialised	81	2004	Senior management and key engineers gained experience at a Japanese company	c		c			1		
A8	State	X	Metal	1,100	1980	Diesel engines for domestic market		1	2		1	1		1
A9	Private		Specialised	150	1988	Replacement components		1	2			2		1
A10	Private		Plastic	182	1994	Household products and packaging		1	2			2		1
A11	Private		Specialised	170	1999	Components of dies and moulds		1			1	2		1
B1	State	X	Metal	600	1974	Bearings for domestic market		1		1	1	1		1
B2	State	X	Metal	157	1970	Components for agricultural machinery		1		1	1	d		1
B3	Private		Metal	200	1986	Replacement components		1	2	1	1	2		1
B4	Private		Metal	400	1981	Bicycle components		1	2	1	1	2	1	1
B5	Private		Metal	150	2001	Trading motorcycles	c			1		2		1
C1	Private		Metal	150	1959	Bicycle components		1		1				1
C2	Private		Metal	450	1987	Bicycle components		1		1				1
C3	Private		Metal	170	1996	Replacement components		1		1			1	1
C4	Private		Assembly	115	1988	Trading bicycles/motorcycles and components		1		1			1	
C5	Private		Assembly	100	1999	Trading motorcycle components	c			1				1

Source Adapted from Fujita (2012:119), prepared on the basis of the author's interviews and complemented by company brochures, and websites

[a] Types of component processing are classified as follows: *Metal* steel/aluminium parts requiring die-casting, machining, stamping, and/or forging processes; *Plastic* plastic injection moulding; *Specialised* suppliers engaged in specialised processes such as plating and high-precision machining; *Assembly* suppliers producing components mainly as assembly processes without large investment in processing equipment

[b] Value chain participation is indicated as follows: *1* first tier; *2* second tier

[c] Denotes that the supplier was not established at the respective stage of industrial development

[d] Indicates the firm was preparing to become a supplier. Although a formal supply contract was yet to be signed, it had experienced a learning event in this chain

experience could be anywhere between a few years and more than 40 years. Following the common approach to the investigation of firm-level capability building by stages of firm development (Ariffin 2000; Chitravas 2006), one might expect suppliers established in the 1960s to be much more advanced than those established in the 2000s. However, this was not necessarily the case. Length of operating experience prior to the start of market-oriented economic reform in Vietnam in the late 1980s made little difference to a supplier's learning attainment because the activities of such firms in those days were limited to the production of simple products for a stagnant domestic market subject to a centrally planned economic system that offered few opportunities for the acquisition of new capabilities. Therefore, taking account of the specific Vietnamese context, this book analyses capability building trajectories by the stages of industrial development since the mid-1990s outlined in Chap. 2 rather than by stages of suppliers' development.

5.3 Data Sources and Methods of Analysis

The most important source of data was the author's interviews with the 21 suppliers conducted between September 2008 and March 2009. All suppliers other than A5, A10, A11, B2, C1, C4 and C5 were interviewed more than once. The first interview was usually with a firm's senior management with the aim of identifying up to three major learning events experienced by the supplier since the mid-1990s. The second interview was usually with the manager(s) directly responsible for new product introduction and/or production activities, and focused on the collection of detailed data for each learning event.

Regarding the suppliers interviewed only once, a second meeting was generally considered unnecessary because in these relatively small-scale companies, the senior management was typically responsible for new product introduction and production activities. The small size of such firms, limited product lines, the narrow scope of activities, and/or the comparatively few learning events evinced made it possible for the author to collect the required data in an extended interview with the senior management.

Interviews were conducted in Vietnamese and were recorded with the permission of interviewees.[3] This decision was made on the basis of the fact that, as a non-native speaker of Vietnamese, the author had difficulty in simultaneously asking questions and taking notes. After the interviews, the recordings were used to prepare transcriptions in Vietnamese.

[3] In several cases, interviews were not recorded because either the interviewees explicitly refused to be recorded or the author judged that the interviewees were apparently reluctant to be recorded.

The first round interview began by asking about the supplier's overall business performance, product and market structure, and relations with its main customers since the late 1990s. The author then proceeded to elicit information on up to three major learning events that had taken place in the supplier's activities in a Japanese or Vietnamese–Chinese chain.[4] Senior managers were asked to identify the times at which the supplier's methods of introducing new products, engaging in equipment-related activities, or conducting production management changed the most. By asking what the supplier learned to do as a result of a particular event, the author judged whether the incident constituted the acquisition of a new capability or not.[5] If managers offered more than three incidents, the author selected the three that best demonstrated the extent to which improvement in capability level was achieved. Many events involved changes in the level of capabilities in more than one function. In cases of events associated with the suppliers' relationships with more than one lead firm, the suppliers were asked to identify the one that played the most vital role.

Having identified the domains of activities in which learning events took place, the author requested a second visit with the supplier for a meeting with the manager(s) in direct charge of the activities. Second round interviews normally proceeded as follows.

(1) Interviews began by identifying the supplier's capability status at the point of departure, that is, immediately preceding its entry into a motorcycle production value chain. Questions were asked about how each of the motorcycle value chain functions was conducted by the firm at this stage.
(2) The interviews proceeded to questions concerning how the means of conducting new product introduction or production changed after the learning events which were identified during the first interview. Follow-up questions were asked about the details of each event, such as how it actually took place, who participated in it, what contribution they made to the process, and what the firm was able to do as a result of the event. Additionally, firms were asked to rank the actors involved in the events in order of their significance to the outcome.
(3) Attempts were made to identify how one event eventually led to another. There were also instances when learning events identified in the first interview had to be modified as additional information pointed to the occurrence of more important events.

[4] In reality, the author ended up in securing details of between one and three events depending on the length of operation and growth path of each firm.

[5] Following the approach taken by Lema (2010), initial attempts were made to ask senior managers to shortlist the events they considered to be most important, but this invariably ended up in details of incidents that were completely irrelevant to the analytical framework of the present study. Therefore, it was eventually decided that the author should select the events and assess the capability levels on the basis of the analytical framework.

It needs to be acknowledged that data collection via qualitative interviewing is subject to limitations. Since knowledge is contextual and can only be constructed or reconstructed during interviews, the qualitative interview method is heavily dependent on the interviewee's capacities to interact with the interviewer as well as to remember, conceptualise and verbalise his or her experience (Mason 2002: 64). Particularly in retrospective interviews, typical errors are attributable to faulty memory, hindsight bias or intentional misrepresentation of the past to maintain self-esteem (Golden 1992). Whilst such errors cannot possibly be eliminated completely, the author sought to increase the validity and reliability of the findings primarily by multiple sourcing of data (Patton 2002).

First, as already elaborated, two or more individuals were interviewed for majority of the suppliers. Whilst senior managers were generally more concerned with the prestige of their companies, managers directly taking charge of new product introduction or production were often much more knowledgeable about and willing to provide first-hand information on actual activities. Obtaining information on a particular event from different individuals was likely to have helped to correct any biases that the individuals might have had.

Second, in most cases, an interview with the management was followed by a visit to the supplier's factory, where the author had a chance to observe the components being manufactured, the types of machines and equipment being used, production management techniques being applied and the degree of worker discipline. The on-site visit provided precious pieces of evidence on the present status of the suppliers' activities and enabled the author to confirm the reliability of the data obtained during the interview.

Third, data gathered through the author's previous interviews or surveys for some of the case suppliers between 2002 and 2005 were utilised extensively. Since they were driven by different yet related sets of questions, some of this data transpired to be usable in the present study. Notes taken during factory visits were also precious sources of information that could be used to help identify degrees of change. Moreover, the general understanding of a given company's development process and previous situation derived from past interviews also provided excellent foundations for preparing specific questions for the present study's interviews. The author's thorough knowledge of suppliers' previous situations also enabled consistency checks and the extraction of data of much higher quality and precision than would otherwise have been possible.

Fourth, suppliers' direct customers (lead firms in the case of first-tier suppliers, and first-tier suppliers in the case of second-tier suppliers) provided vital objective assessments of learning performance and trajectories. In particular, data provided by HVN, as well as lead firms and first-tier suppliers engaged in regular transactions with more than one of the 21 case suppliers, were critical as many assessments and remarks were presented comparatively. In the event that supplier and lead firm interviews produced different results, the author attempted to reconcile inconsistencies by looking for hints as to possible reasons for the differences through careful interpretation of interview data derived from both sides. Wherever possible, a third party such as an industry expert was also interviewed.

Suppliers' direct customers also provided detailed information on the roles they played in encouraging the suppliers' capability building. They became the vital source of data on the lead firms' engagement in supplier learning and the nature of knowledge flows, including how and why these changed over time, of which many of the suppliers were not necessarily aware. In short, researching both sides of the value chain has made it possible to gain a comprehensive picture of the mechanism of suppliers' capability building.

Fifth, additional data were obtained from websites, annual reports, company directories, brochures of international exhibitions in which suppliers had participated, and reports prepared by experts who had visited suppliers at different times. Reports prepared by technical experts who had been dispatched by aid organisations to evaluate supplier capabilities provided particularly useful information.[6]

The full list of interviews is provided in Appendix. Interviews cited in this book are referred to by firm and interview codes as explained in Appendix.

Through the data collection process, the author amassed a set of questionnaires completed during interviews, hand-written notes taken during interviews and factory visits, photographs of production sites, and several hundred pages of interview transcriptions. The analysis began with the coding of these materials to create a database of learning events, which covered start and end dates, types and levels of capability attained as a result of the events, types of value chains in which the events took place, actors involved in the events, and sources of knowledge mobilised in the process of the events.

In the initial stages of analysis, the database was utilised extensively to search for similarities and differences in learning attainment and its sources across suppliers. Since the fact that suppliers had *not been sampled randomly* meant that percentages (of events or suppliers) could not be used to support hypotheses, the author followed the replication logic to search for similarities across suppliers classified by value chain participation and identify the reasons for any exceptions. As the author proceeded to the supplier-level analysis, an initial attempt was made to utilise the database to analyse learning trajectories as a sequence of events that took place within a particular supplier. In the last stage of the analysis, an effort was made to conduct an in-depth comparative examination of a small number of particularly illuminating cases.

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[6] JETRO (1996, 2001) are examples of such reports.

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